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A NEW NAME FOR A UTAH LEPIDIUM

James L. Reveal^{1, 2}

For several years, Utah State University and the New York Botanical Garden have been working on the *Illustrated Flora of the Intermountain Region* which will have its first volume published in a few years. As a first step to preparing for the actual writing of the *Flora*, a checklist was written to summarize the known plants which occur in this area by Arthur H. Holmgren, Curator of the Intermountain Herbarium, and this author (1966). During the time of the writing of the checklist, several taxa were noted which seemed to be worthy of more study in the field and in the herbarium. One such taxon is *Lepidium montanum* Nutt. ex Torr. & Gray ssp. *demissum* C. L. Hitchc.

Questions regarding this subspecies were raised by the brief comments given concerning the possible relationships of it to *L. montanum* (sen. lat.) in general, and to *L. davisii* Rollins in particular. From the short description of ssp. *demissum*, and the more complete description of *L. davisii* (Rollins, 1948) which Hitchcock (1950) also reduced to the subspecific rank under *L. montanum*, it seemed that these two taxa did not fit properly into the *L. montanum* complex as previously defined by Hitchcock (1936). Thus, an isotype and other specimens of *L. davisii* were studied by the author at Idaho State University in 1963. The following year, attempts were made to find both ssp. *demissum* and ssp. *davisii* in their type localities, but no plants were found. In the spring of 1965, after a determined search for the ssp. *demissum* in its type locality in the lower end of Indian Creek Canyon, Duchesne Co., Utah, flowering specimens were finally found and studied.

During the author's Predoctoral Internship at the Smithsonian Institution, herbarium studies upon the entire *Lepidium montanum* complex were conducted at the United States National Herbarium, the New York Botanical Garden, and the Gray Herbarium of Harvard University. Additional studies were carried out on specimens at the various Utah herbaria at Logan, Salt Lake City, and Provo.

In the spring of 1967, the type locality of *Lepidium montanum* ssp. *demissum* was again visited and fruiting material obtained and studied. From these combined field and herbarium studies, evidence

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seemed to mount which indicated that *L. davisii* as well as the ssp. *demissum* were distinct species in their own right. As the epithet, *demissum* has been used at the species level for a South American *Lepidium*, it is necessary to provide a new name for the Utah plant which is now proposed as:

Lepidium barnebyanum Reveal, nom. nov.

L. montanum Nutt. ex Torr. & Gray ssp. *demissum* C. L. Hitchc., Madroño 10:157. 1950, non *L. demissum* C. L. Hitchc., Lilloa 11:121. 1945.

Pulvinate perennials, (4) 5-15 cm. high and up to 20 cm. across, the mats often forming raised humps; taproots deep, woody, once or twice divided and widely spreading, the caudices dichotomously branched 3-6 times. 2-5 cm. below the surface of the ground, invested with only a few old leaf-bases, each resulting caudex branch topped by a single, erect, green, leafy and herbaceous stem, the plants appearing glabrous and glaucous, yet with minute retrorse simple trichomes which are usually widely scattered nearly throughout the plants; leaves basal and cauline, the basal leaves linear to linear-oblongate, entire, \pm v-shaped, 2.5-3.5 (4.5) cm. long, (1) 2-3.5 (4) mm. wide, the apices acute, the bases tapering gradually to slightly expanded clasping petiole-bases, these hyaline and membranaceous, 2.5-3.5 mm. wide; cauline leaves alternate along the stems and about equally spaced, 5-10 mm. apart, the leaves 8-25

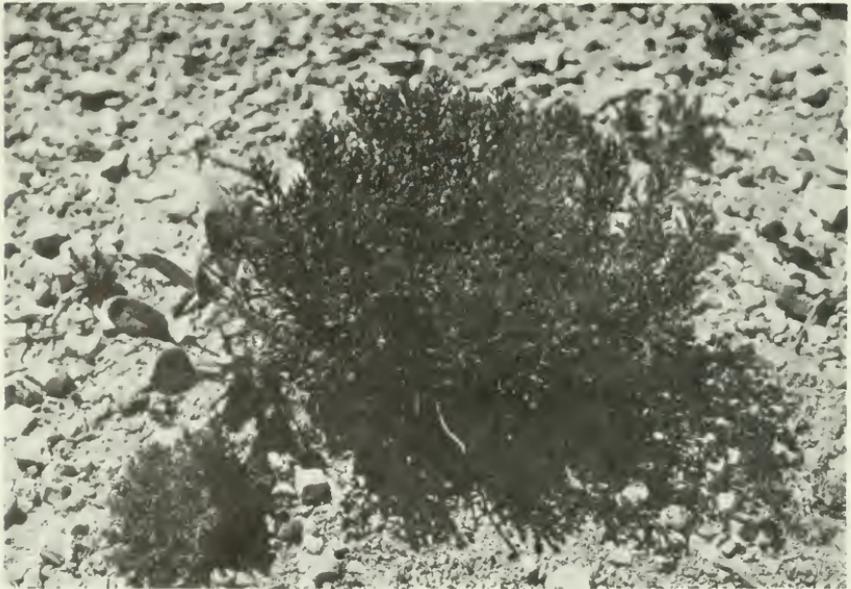


Fig. 1. General growth pattern of a fruiting plant of *Lepidium barnebyanum* showing the pulvinate habit and the raised humps.



Fig. 2. Enlarged detail of the inflorescences of *Lepidium barnebyanum* showing the oblong-ovate fruits on the ascending pedicels and a few terminal flowers.

(30) mm. long, similar to the basal leaves but more reduced; racemes 1-2 (3) cm. in early anthesis, \pm clustered, becoming 2.5-6 (8) cm. long in fruit although a few late flowers may be present. leafless. the simple trichomes more numerous than below; pedicels terete, slender, ascending, 3-5 mm. long; sepals greenish, 2 mm. long and 1-1.5 mm. wide, concave-convex, deciduous shortly after anthesis, flowers 3-4 mm. long and up to 7 mm. across, the petals white with the blades rotund, 2-2.5 mm. long and wide, narrowing to slender claws 0.8-1 mm. long, 0.3-0.5 mm. wide, the blades curving backwards from their bases; stamens 6, the singles slightly longer than the pairs, the filaments 2-2.5 mm. long, glabrous, the anthers yellowish, oblong, 0.8-1 mm. long; silicles oblong-ovate, (3) 4-5 mm. long, (2) 3-4 mm. wide, less than 2 mm. across, glabrous, not winged, the apices tapering to long, briefly truncated tips; styles 0.5-1.2 mm. long; cotyledons incumbent.

TYPE.— UTAH: Duchesne Co.: Indian Creek Canyon on white shale ridge-tops, ca. 4 mi. sw of Duchesne, 15 Jun 1947, D. D. Ripley & R. C. Barneby 8699. Holotype deposited at WTU! Isotypes: NY! US!

DISTRIBUTION.— KNOWN only from a long ridge-top on the north edge of Indian Creek Canyon, ca. $\frac{1}{2}$ mi. n of Utah Highway 33, 3.5-4 mi. sw of Duchesne, Duchesne Co., Utah, sec. 16-17, T. 4 S., R. 5 W., elevation 6400-6500 feet. Flowering in May and June, fruiting into July.

SPECIMENS EXAMINED.— UTAH: Duchesne Co.: North ridge of Indian Creek Canyon, 3.5 mi. sw of Duchesne, *Holmgren, Reveal & LaFrance, 1959* (BRY, NY, UTC), *Reveal & Reveal 884* (BRY, CAS, DS, GH, MO, NY, OKL, RM, RSA, UC, US, UT, UTC, WTU).

Hitchcock (1950) considered *Lepidium barnebyanum* to be a subspecies of the highly variable and complex species, *L. montanum*, and most closely related to *L. montanum* var. *integifolium* (M. E. Jones) C. L. Hitchc. However, I feel that the morphological differences between these two taxa are so great that the species rank which is now proposed seems much more logical. From *L. montanum* var. *integifolium*, *L. barnebyanum* differs in its sparsely pubescent stems, leaves, and pedicels, the short linear to linear-oblancoleate entire leaves, the highly branched and compressed rooting system which results in the pulvinate mats, and in the oblong-ovate silicles. In several respects, and especially in the pulvinate habit, *L. barnebyanum* is similar to *L. davisii*, a species which

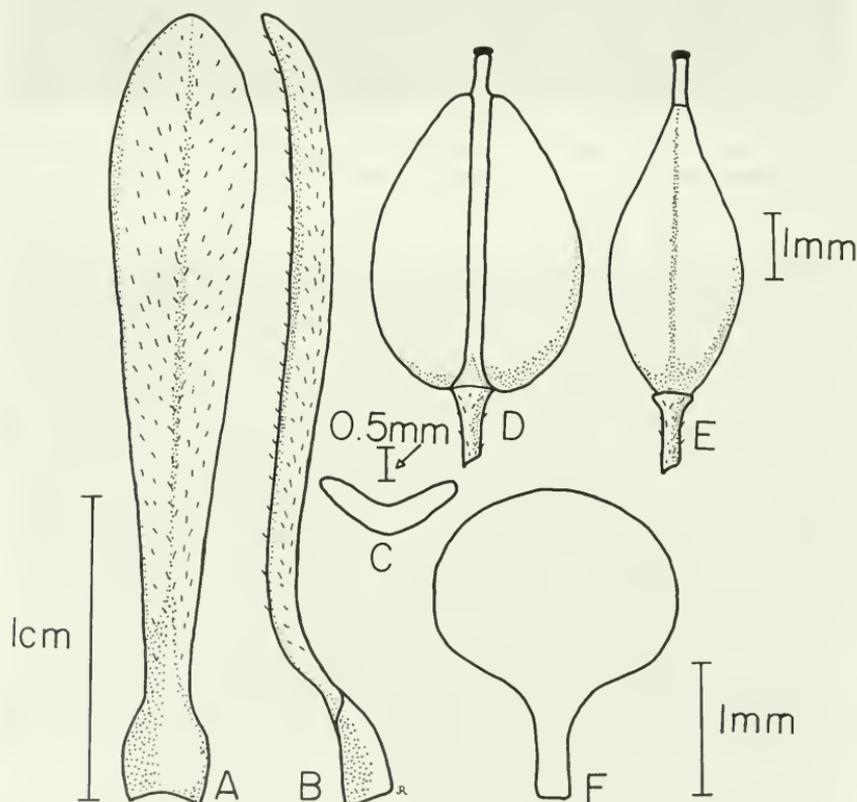


Fig. 3. Sketches showing the salient features of *Lepidium barnebyanum*. A-B—front and side views of a basal leaf, C—a cross section through a leaf showing a v-shape. D-E—front and side views of a mature silicle. F—an outline of a mature flower petal showing the rotund blade and the narrow claw-like base.

is apparently highly restricted to a dry bed of a small playa on a sagebrush mesa near the lava outcrops on the north rim of the Snake River Canyon, about 12-14 miles south of Mountain Home, Elmore Co., Idaho. However, *L. davisii* may be distinguished by its shorter leaves which are only 1-2 cm. long, denser pubescence, shorter stature (mostly under 8 cm. high), and its shorter silicles which are 3-3.5 mm. long. Unlike *L. barnebyanum*, the basal leaves of *L. davisii* are shorter than the cauline leaves.

In the field, the Utah *Lepidium* occurs with *Eriogonum batesmanii* M. E. Jones and *Silene acaulis* L. var. *subacaulescens* (F. N. Will.) Fern. & St. John, on a broken white shale ridge in a Pinyon-Juniper woodland. It might be suggested that the pulvinate condition of *L. barnebyanum* is a result of the environment, but as most of the other plants on the ridge are found on the sides of the ridge and elsewhere in the Uinta Basin, the effects of the environment of these plants in the several areas where they have been observed does not seem to be an ecological response but rather due to a genetic basis which aids the plants to survive in these ecological niches. Thus, it is suggested that the pulvinate habit and the other morphological features of *L. barnebyanum* are not a result of its ecological niche, but rather a result of natural selection which has allowed for a genetically distinct species to evolve, probably from the *L. montanum* complex. The var. *integifolium* does occur in the general area in more moist habitats, and *L. barnebyanum* may have originated from that entity. In searching for the *Lepidium* on other ridges in Indian Creek Canyon, several other similar ecological sites were found, but no other localities of the *L. barnebyanum* are presently known to the writer.

The species name is selected to commemorate the discoverer of the plant, Rupert C. Barneby, the authority on the genus *Astragalus*, and one of the finest collectors of the Intermountain flora.

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